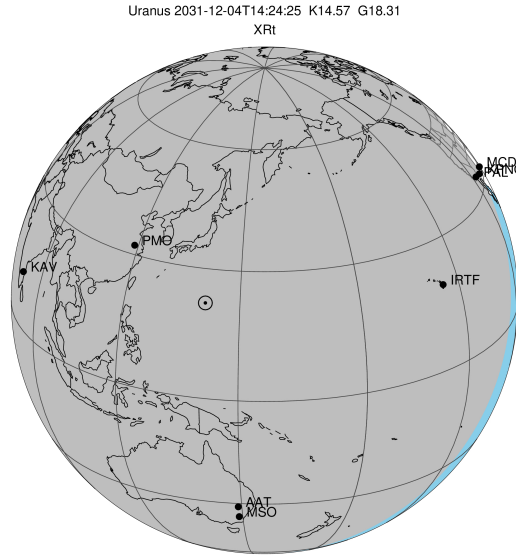


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2031-12-04T14:24:25.750
 Event type : XRT
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Gaia source ID : 3404422319849250688
 2Mass ID (if available) : 05393342+2330176

ICRS Star Coord at Epoch: 05h 39m 33.41151s +23:30:17.56499s

RUWE (>1.4 is poor) : 1.03
 K magnitude : 14.570
 G magnitude : 18.314
 RP magnitude : 17.239
 BP magnitude : 19.494
 DUPflag : 0
 Distance (au) : 18.129
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.60
 Sun-Target sep (deg) : 166.47
 Sun-Moon sep (deg) : 48.88
 B (ring opening deg) : 79.03
 PA of pole (deg) : 41.97

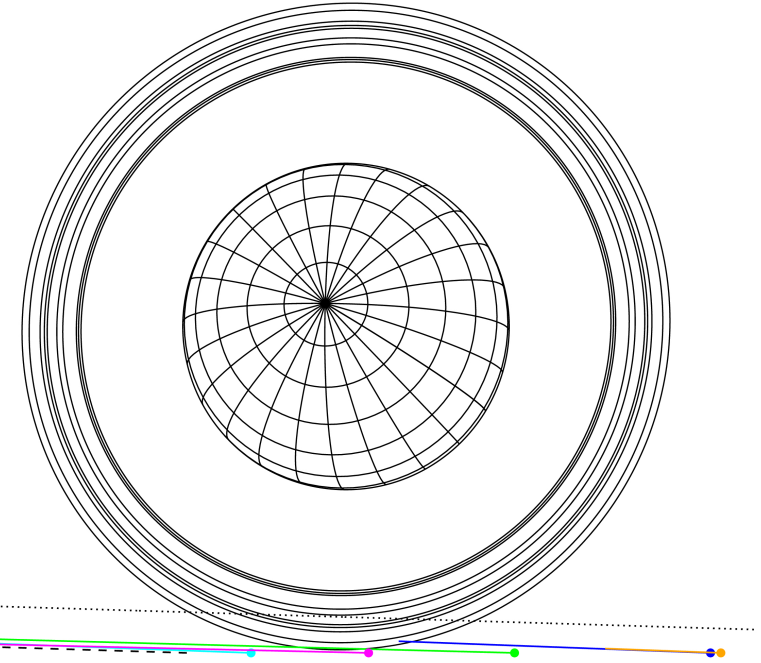
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2031-12-04T14:24:25.7500 ra: 05 39 33.4115 s: +23 30 17.565 C/A 3.9377 PA 358.24 deg v_sky -22.60 km/s D 18.13 AU
 Credit: Styled after SORA/Lucky Star

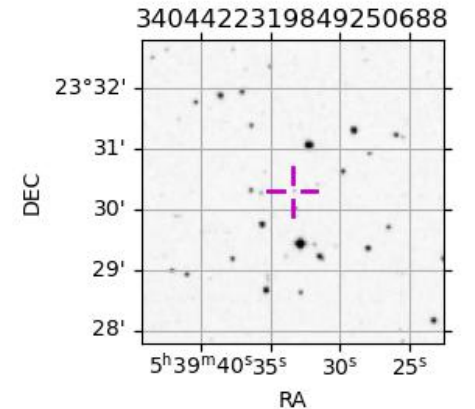
Uranus 2031-12-04T14:24:25 K14.57 G18.31 XRT

PAL
 PMO
 KPNO
 IRTF
 KAV

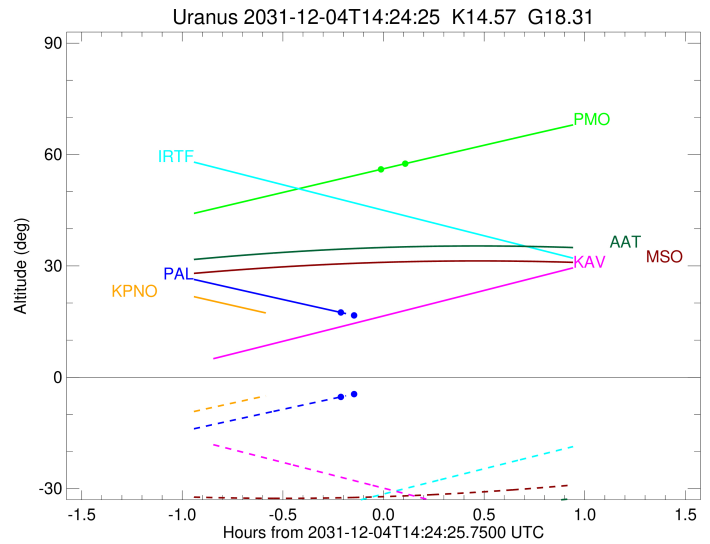
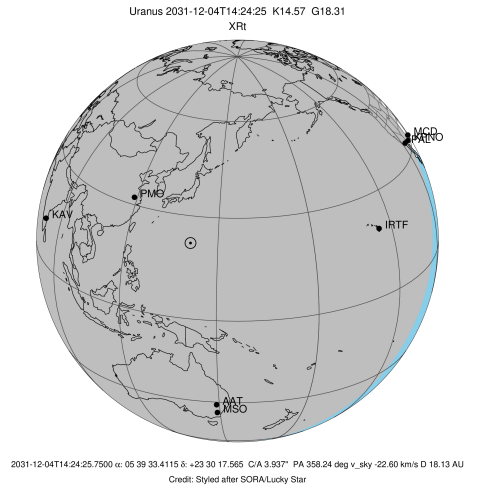


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	+			DEC 04 14:10 - DEC 04 14:10	PnnRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+		+	DEC 04 14:21 - DEC 04 14:32	PnnRie
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2031-12-04T14:20:41.440
 Event type : XRt
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 3404422319849250688
 2Mass ID (if available) : 05393342+2330176
 ICRS Star Coord at Epoch: 05h 39m 33.41151s +23:30:17.56499s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 14.570
 G magnitude : 18.314
 RP magnitude : 17.239
 BP magnitude : 19.494
 DUPflag : 0
 Distance (au) : 18.129
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.60
 Sun-Target sep (deg) : 166.47
 Sun-Moon sep (deg) : 48.59
 B (ring opening deg) : 79.03
 PA of pole (deg) : 41.97
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.723
 C/A sky separation (km) : 48950.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



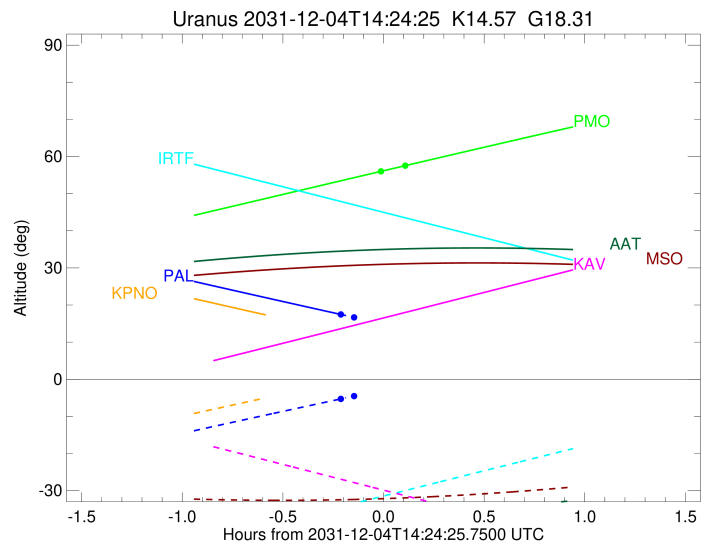
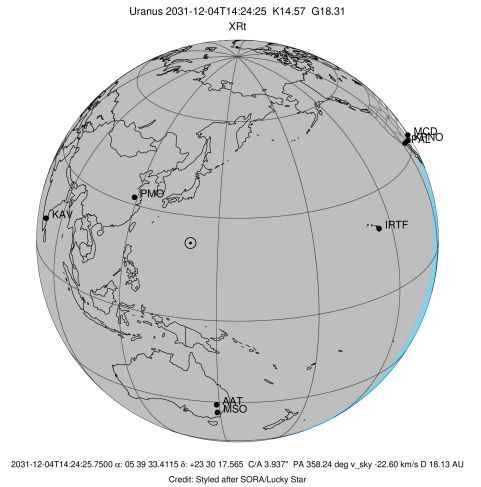
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2031-12-04T14:10:40.802		17.67	-5.50	51549.20	-6.46		
lambda	I	2031-12-04T14:15:43.604		16.66	-4.53x	50026.71	-3.52		

No planet occultations

lambda	E	2031-12-04T14:26:59.274		14.41	-2.38x	50026.71	3.52		
epsilon	E	2031-12-04T14:31:46.470		13.46	-1.48x	51447.04	6.45		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2031-12-04T14:26:37.060
 Event type : XRt
 : No Uranus occs
 : Ring occs: topocentric, not geocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3404422319849250688
 2Mass ID (if available) : 05393342+2330176
 ICRS Star Coord at Epoch: 05h 39m 33.41151s +23:30:17.56499s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 14.570
 G magnitude : 18.314
 RP magnitude : 17.239
 BP magnitude : 19.494
 DUPflag : 0
 Distance (au) : 18.129
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.60
 Sun-Target sep (deg) : 166.47
 Sun-Moon sep (deg) : 49.77
 B (ring opening deg) : 79.03
 PA of pole (deg) : 41.97
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.834
 C/A sky separation (km) : 50415.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2031-12-04T14:21:32.630		55.55	-67.17	51544.53	-3.54		

No planet occultations

epsilon	E	2031-12-04T14:32:47.242		57.94	-69.40	51487.28	3.54		
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